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26 Feb 01  
Date



Docket No.:GK-ZEI-3103/500343.20100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Gerhard J. MULLER and Ralf WOLLESCHENSKY  
Serial No.: 09/658,321  
Filed: September 8, 2000  
For: MICROSCOPE FOR REFLECTED-LIGHT AND TRANSMITTED-LIGHT MICROSCOPY

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to receipt of a first office action, please amend the above-identified application, as follows:

IN THE SPECIFICATION:

Page 1, line 3, after the title line insert the headings:

--BACKGROUND OF THE INVENTION--;

--a) Field of the Invention--;

line 6, after this line insert the heading:

--b) Description of the Related Art--;

Page 2, line 7, after this line insert the heading:

--OBJECT AND SUMMARY OF THE INVENTION--;

line 8, after "it is the" insert --primary--;

Page 6, line 9, delete "In the accompanying drawings:";

after this line insert the heading:

--BRIEF DESCRIPTION OF THE DRAWINGS--;

line 10, before this line insert the phrase: --In the drawings:--;

line 13, after this line insert the heading:

--DESCRIPTION OF THE PREFERRED EMBODIMENTS--;

Page 9, last line, last line, after this line insert the following paragraph:

--While the foregoing description and drawings represent the present invention, it will be obvious to those skilled in the art that various changes may be made therein without departing from the true spirit and cope of the present invention.—

#### IN THE CLAIMS:

Preceding "1." change "Patent Claims" to --What is claimed is:--.

Cancel claims 1-15 and add new 16-31, reading as follows:

-16. A microscope comprising:

two objectives between which a light-transmitting specimen may be arranged;

said objectives having at least approximately identical optical characteristics;

at least one of said two objectives being followed by a mirror for reflecting light transmitted through the specimen back into itself exactly.

17. The microscope according to claim 16, wherein the two objectives have the same numerical aperture and the same other characteristics, wherein both objectives are constructed as planapochromats with a numerical aperture greater than or equal to 1.4.

18. The microscope according to claim 16, with incident illumination and field transmission of the image information, wherein one of the objectives serves as a microscope objective and the second objective is part of a reflecting device through which the specimen is imaged onto itself with lateral and vertical accuracy.

19. The microscope according to claim 16, wherein diaphragms, Wollaston prisms, polarizers and/or other subassemblies for optical contrasting are arranged in the beam path.

20. The microscope according to claim 16, but with a coherent illumination source in which one of the mirrors is constructed as a phase-conjugating mirror.

21. The microscope according to claim 16, wherein a dichroic beam splitter is provided for reflecting into the illumination source.

22. The microscope according to claim 16, wherein another mirror is provided between the microscope objective and eyepiece, the specimen being imaged on this mirror through the microscope objective, wherein this mirror passes the illumination beam but does not pass a selected beam component, preferably fluorescent radiation, coming from the specimen.

23. The microscope according to claim 16, constructed as a laser scanning microscope, wherein one of the objectives serves as a microscope objective and the second objective is part of a reflecting device having a phase-conjugating mirror or an adaptive mirror by which the wavefront of the reflected light is made to coincide with the wavefront of the transmitted light.

24. The microscope according to claim 23, wherein the adaptive mirror (23) is provided with a deformable mirror surface arranged on a diaphragm, and a plurality of individual electrodes are located opposite the diaphragm on its side remote of the mirror surface, and electric voltage is applied to the diaphragm on the one hand and to the electrodes on the other hand, and the deformation of the diaphragm is brought about by changing the voltages and electrostatic forces acting between the diaphragm and electrodes, or the diaphragm is connected, on its side remote of the mirror surface, to a plurality of individual

piezoelectric drives and the deformation of the diaphragm is brought about by controlling the piezoelectric drives in different ways.

25. The microscope according to claim 24, wherein the electrodes and/or the piezoelectric drives communicate with a detection device for a beam component which is coupled out of the observation beam path, with fluorescent radiation proceeding from the specimen.

26. The microscope according to claim 16, wherein the reflecting device is constructed as a brightfield arrangement having two objectives which together form an optical system with an infinite output intersection length.

27. The microscope according to claim 16, wherein the reflecting device can be swiveled out of the microscope beam path and a photomultiplier can be swiveled in its place for transmitted-light detection.

28. The microscope according to claim 16, wherein at least one of the objectives is connected with adjusting devices for displacement in axial and/or radial direction and the adjustment is carried out depending on the assessment of the observation beam path with respect to its intensity and/or contrast.

29. The microscope according to claim 27, wherein the adjusting devices are coupled with drive elements.

30. The microscope according to claim 27, wherein said drive elements are piezomechanical drive elements.

31. The microscope according to claim 16, wherein there is a detector for a beam component which is coupled out of the observation beam path, with fluorescent radiation proceeding from the specimen.--

IN THE ABSTRACT OF THE DISCLOSURE

Page 14, line, 1, change "Abstract" to --ABSTRACT OF THE DISCLOSURE--;

line 2, change "The invention is directed to a" to --A--; after "microscope" insert  
--is disclosed--;  
line 5, combine this paragraph with the first paragraph; delete "(2, 3)";  
line 6, delete "(2, 3)";  
line 7, delete "(5)";  
line 10, combine this paragraph with the first paragraph;  
line 13, delete "Fig. 1".



### REMARKS

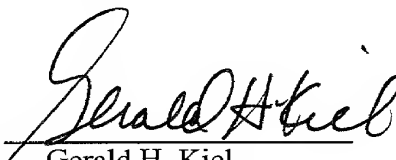
Claims 1-15 have been cancelled and new claims 16-31 have been added.

These new claims have been added to amend the form of the previous claims and to eliminate multiple dependencies in order to reduce the filing fee.

The specification and abstract have been amended to conform it to U.S. format.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

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